# Contents

# **T**echnology News

Changing of the Guard	4-7
Welcome to Liana Liu, FHWA	9
Danger Signs Video Recalled by FHWA	10
Ecology Stormwater Manual & Continuous Flow Modeling	10-11
CONGRATULATIONS TO ALL! A New Record for STIP Approval	11
WST2 Center Sponsors Millennium MUTCD Videoconference	12-13
Capital Facilities Planning Template and Tools	14-15
Conferences & Meetings	55

# Articles

Photogrammetry Products and Processes — Things You Should Know	16
WSDOT Phases In Fluorescent Orange Sheeting & NCHRP 350 Compliant Construction Signs	18-19
Road Safety Audits-Proactive Safety	22
High Performance Concrete (HPC) in Washington State	21
Pooled-Fund Study to Validate Geotech Device	17

# Departments

From the Editor's Desk	3
PQT News	
The Washington Partnerships for Quality Transportation (PQT) Award Winners Are	24-25
Evergreen Interchange Partnership Project Nears Completion	26
State/County Collaboration Saves Time, Dollars	27
Partnering: Design-Build Pilot Project	26-27
NWPMA News	
Words From the Chair	34-35
WST2 Center Partners to Develop Web-Based Pavement Training	36
Nomination Form for Keith Kay Memorial Pavement Manager of the Year 2001	37
Nomination Form for 2001-2002 Officers and Executive Board	37
USDOT-NHTSA/FHWA	
Focus on Safe Communities	38
Buckle Up America!	38-39
Pedestrian/Bicycle Safety Materials Available	40
The Intermodal Transportation Database Available!	39

## Departments (continued)

### **BTEP**

B.C. Team Collects Information on Washington State Seismic Damage	42-45
WSDOT Library — Looking Forward and Looking Back	41
Roger's Technology Toolbox — Is there a DIP in your future?	46-49
Build a Better Mousetrap	
Breakaway Sand Spinner	30-31
Tack Distributor Waste Diesel Recycling System	28-29
Mousetrap Submittal Form	33
Publications From Your WST2 Center	50-51
Training	
Training Opportunities	52-54
Sign Of the Time	56



# WST2 is available on-line:

http://www.wsdot.wa.gov /TA/T2Center/T2Bulletin-archives/ T2Bulletin.html

If you would like to receive an electronic version via e-mail you can subscribe through our "T2 Newsletter" list serve. Go to the WSDOT Home Page. Click on Business with WSDOT, Highways & Local Programs, T2 Center, T2 Bulletin List Serve. Go to the bottom of the page and enter your e-mail address, then click on "Submit." An address verification will be sent to the subscription address. Authorization must be sent to the list request address before the subscription is accepted.

# WST2 in hard copy via:

U.S. Mail, call the WST2 Center at (360) 705-7386 and request it. Be prepared to give your name, agency or firm, mailing address, and zip code +4.

If you have a change of address, please contact us with the old and new addresses.

If your agency or firm receives issues addressed to a person who no longer is employed there, please call the WST2 Center at (360) 705-7386.



By Roger Chappell, WST2 Technology Integration Engineer, WST2 Center

# What I am talking about here is Digital Imaging Platforms or DIPs. These systems allow you to capture images of your infrastructure and display them on a computer. They come in all shapes, sizes and kinds. Some vendors also add tools like laser reflectometers, profilometers and Ground Penetrating Radar (GPR). For this introductory

article, I would like to focus our

attention on just Ground Based

Imaging or GBI.

Ground Based Imaging may sound like a new term, but in principle, it has been around for a long time in different forms. I started in GBI in the early eighties; at that time there was a paradigm shift from the old 35mm reel film to 3/4 inch Sony U-Matic, or Beta videotape, ushering in the dawn of videotape based systems. In the late eighties there was a shift to Beta or SVHS tape-based systems and the nineties saw the transition to a combination of tape and digital imaging systems. No matter what the current technology, format or equipment used, the basic product is the same, a photo image connected to

Today in the 2000's, digital images are dominating the scene and for good reason. Unlike their predecessors, these new digital images can be distributed more inexpensively and to a wider audience

# Is there a DIP in your future?

No matter what the current technology, format or equipment used, the basic product is the same, a photo image connected to a geographical location.

than ever before. These images are also more versatile than their predecessors. As a digital file you can E-mail them, draw on them, use them in presentations, import them into a GIS or a host of CAD and graphics software packages.

Even the geographical location of these images has improved through time. With the advent of cheap GPS (Global Positioning System), you can now supplement your traditional LRS (Linear Referencing System) or mile posting, with geospatial coordinates from GPS.

As digital files you can E-mail them, draw on them, use them in presentations, import them into a GIS or a host of CAD and graphics software packages.

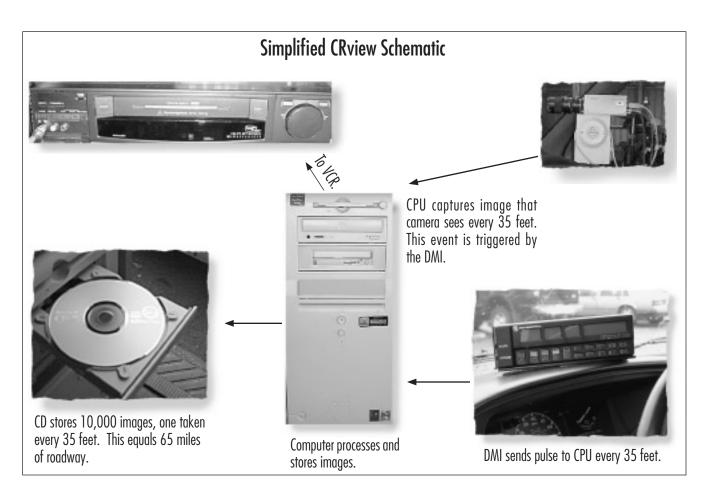
In the Northwest there is a system design available to help local

agencies apply this technology for themselves: it is called Trans-View (Transportation View). This system is based on the work accomplished by the Washington State Department of Transportation's Transportation Data Office (TDO). In the mid nineties, the Transportation Data Office first applied this technology under a project named SR View (State Route View).

Then the WSDOT Highways & Local Programs WST2 Center made the results of this successful project available to local agencies. Marion County, OR was the first local agency outside WSDOT to build one for themselves. They called it CR View (County Road View). Building on Marion County's success, Thurston County, WA is now in their first year of production with a system of their own. This is a third generation system with improvements on the first two systems.

Rather then rambling on about these systems myself, I have asked Hans Cregg to outline Thurston County's experience in applying this technology. Hans was key in the development of SR View. He helped develop Marion County's CRview, and most recently has been instrumental in helping Thurston County with their CR View application and systems integration.

a geographical location.





CRview van has "filmed" 90% of the county's road system providing a picture every 35 feet. When completed, CRview will have digitally captured the 2,200 lane-mile county road system in 330,000 images.

# CRview-DIP the Thurston County Way!

by Hans Cregg, Thurston County, WA

Thurston County's interest in fielding a mobile imaging platform to gather roadway images dates back to 1995. The county's Roads and Transportation Services Department quickly recognized the advantages of having an annual visual record of all county roads. After all, a picture is worth a thousand words.

However, it wasn't until 1998 that Thurston County bit the bullet and allocated the money and time to build a functioning imaging system. It was Mr. Leslie Olsen, County Surveyor, and Mr. Daniel DeBoer from the Thurston County Survey Office that led to the successful implementation of the county's imaging system, dubbed CRview, in August of 2000.

Since its maiden voyage, the CRview van has "filmed" 90% of the county's road system providing a picture every 35 feet. When completed, CRview will have digitally captured the 2,200 lane-mile county road system in 330,000 images. The captured images are compressed JPEG files occupying approximately 80K bites of hard drive space per picture. A slideshow viewer displays these pictures at a default setting of 640 X 480 pixels. The pictures have excellent resolution and no "jaggies." Road details are crisp and traffic signs are readable.

Currently Thurston County is in the process of uploading the images to a server. The server will afford county employees the convenience of driving the county's roads from their computer. The question "what is really out there?" can be answered without leaving the office.



CRview Van

# What is Thurston County using CRview for?

The capability of accessing roadway images on the computer is only now being fully explored. Any situation where "only a picture will do" is a potential CRview application.

Today, CRview satisfies the following county needs where a visual record is desirable:

- Standard Road "Filming"
- Accident Investigation
- Sign Inventory
- Right-of-Way Encroachment
- Culverts and Guardrail Inventory
- Vegetation Management
- Special Projects such as Rails to Trails

New applications for CRview are surfacing virtually every day. Currently the county is exploring the possibility of using CRview ...the CRview van has "filmed" 90% of the county's road system providing a picture every 35 feet.

for Pavement Evaluation and Retro-reflectivity.

### How does CRview work?

The CRview van drives the county's roads in both directions. A Distance Measuring Instrument (DMI) superimposes milepost information on the image captured every 35 feet. Since the DMI is nothing more than a fancy odometer, the CRview software is able grab the image the camera sees at the precise moment that the DMI "turns over," every 35 feet

CRview software compresses that image, gives it a file name, stores it on the hard drive of the on-board computer, clears its memory and waits to grab the next image 35 feet down the road. The file name

given to the image is the actual milepost reading of the DMI. Thus image 10754.jpg corresponds to milepost 10.754 as indicated on the DMI. Traveling at roughly 35 mph, CRview is able to capture and process an image every 0.7 seconds.

### **Capabilities:**

CRview images provide a sequential visual record of the road just driven.

The CRview platform is also capable of capturing GPS centerline reference points on the fly. However, since Thurston County already had established centerline coordinates for all its roads this feature is currently not used.

In addition, the CRview imaging platform can also produce regular "old-fashioned" videotapes on request with road name and milepost information overlaid onto the tape.

# Building your own imaging platform:

Admittedly there is something intriguing about following in Thurston County's footsteps and building your own imaging platform. It has been an extremely challenging as well as rewarding journey for Thurston County.

Before embarking on building your own imaging platform make absolutely certain that your management clearly understands that this is not a "Plug and Play" system. Allow yourself at least a year to get the system up and running. The reason for the seemingly long lead-time is that you are forging the widely diverse technologies of imaging, electronic distance measuring, videography and possibly GPS into an integrated computer controlled system. Suffice it to say there is a lot to learn, but there is also a lot to gain if you are willing to invest the time and money.

Allow yourself at least a year to get the system up and running.

# Thurston County system costs:

The costs shown below are approximations based on Thurston County's imaging platform. They do not include the van, GPS equipment, and labor associated with building and learning the system.

### **Basic System costs**

Video Camera	\$8,000
VCR Deck	\$1,000
DMI and Misc.	\$3,000
Inverter	\$3,500
Laptop	\$2,000
Video cards	\$1,500
Magnicoder (Overlay)	\$3,000
Van modification	\$1,500
Computer	\$5,000
Total	\$28,500

### **Conclusion:**

I am sure this brief overview of the Thurston County experience has raised more questions than it has answered. Feel free to contact me, Hans Cregg, at *Hcregg@AOL.com* if you have any questions regarding the building or operation of a CRview imaging platform contact Leslie Olsen at *olsenl@co.thurston.wa.us* or Daniel DeBoer at *deboerd@co.thurston.wa.us* if you want to visit Thurston County and see the CRview van for yourself.

A copy of the manual for the original SR View system is available on the web at:

http://www.wsdot.wa.gov/ta/ T2Center/Mgt.Systems/ InfrastructureTechnology/ InfaThp.html

Keep in mind that these systems are in a constant state of *dynamic evolution*, and this documentation is now two generations old. It useful for a more detailed idea of how these systems work, but you will need to do some research before embarking on a project of your own.



# ublications from your WST2 Center



### Free Publications from Your WST2 Center

For Washington residents only due to limited quantities.

		Name				
4		Agency				
1	WST2	Mailing Address				
$\frac{1}{H}$	IGHWAYS &	City		State		Zip+4
LOCAL PROGRAMS SERVICE CENTER		Phone		Fax		E-mail
		Fax: (360) 705- Mail: WST2/V	6858 VSD	, or mail your order to: B; E-mail: WST2Center@wsdot.wa OT, H&LP, P.O. Box 47390, Olymj available on the WSDOT Homepa	pia,	WA 98504-7390.
Che	eck the items you wou	http: www.ws		wa.gov/TA/T2Center/T2PUBS.h		
	1000 A l' . W' l C	1.1. T2C		Catting Pagelo Walking, Municipal	П	International State-of-the-Art Collo-
	1999 Audio Visual Ca Asset Management 1999	· ·	П	Getting People Walking: Municipal Strategies to Increase Pedestrian Travel, Rhys Roth, Energy Outreach	П	quium on Low-Temperature Asphalt Pavement Cracking, CRREL, 1991
	Asphalt Seal Coats, W Reprint)	ST2 Center (1999		Center  Gravel Road Test Sections Insulated with Scrap Tire Chips, CRREL 1994		Local Agency Safety Management System, WSDOT, 1998, Reprinted 2000
	Asphalt Pavement Re Practice, SHRP, 1993	epair Manuals of		A Guide to the Federal-Aid Highway Emergency Relief Program, USDOT,		Local Low Volume Roads and Streets, ASCE, 1992
	Comparison of Thr Used in Pothole Repa			June 1995 A Guide for Local Agency Pavement		Maintenance of Aggregate and Earth Roads, WST2 Center (1994 reprint)
	Contracting for Profe in Washington State,	MRSC, 1994		Managers, NWT2 Center, 1994  A Guidebook for Residential Traffic		Manual of Practice for an Effective Anti-icing Program: A Guide for High-
	Engineer's Pothole R Army Corps of Eng 1984			Management, NWT2 Center, 1994  A Guidebook for Student Pedestrian		way Winter Maintenance Personnel, FHWA, 1996 New Generation of Snow and Ice
	Family Emergency Pr American Red Cross,			Safety, KJS, 1996 A Guide for Erecting Mailboxes on Highways, AASHTO, 1984		Control, FHWA
	Financing Federal Hi	ghways, FHWA,		Highway/Utility Guide, FHWA 1993	П	Pavement Surface Condition Field Rating Manual for Asphalt Pavement, NWPMA, WSDOT, 1999
	Fish Passage Thro FHWA, USDA, 1998	ough Culverts,		Improving Conditions for Bicycling and Walking, FHWA, 1998		Problems Associated with Gravel Roads, FHWA, 1998
	Fly Ash Facts for Hig FHWA July 1986	, ,		Improving Highway Safety at Bridges on Local Roads and Streets, FHWA, 1998		Pedestrian Facilities Guidebook, WSDOT, 1997 (\$12.00 + postage out- side Washington State)
	Geotextile Selection Manual for Rural U FHWA - 1989			Innovative Materials Development and Testing Volume 2: Pothole Repair, SHRP, NRC, 1993		Pothole Primer – A Public Administrator's Guide, CRREL, 1989

Rating Unsurfaced Roads, A Field Manual for Measuring Maintenance Problems, CRREL
Recommendations to Reduce Pedestrian Collisions, WSDOT, December 1999
Redevelopment for Livable Communities, Rhys Roth, Energy Outreach Center, 1995
Scrap Tire Utilization Technologies, NAPA, 1993
Sidewalk Details, WSDOT, 2000
State-of-the-Art Survey of Flexible Pavement Crack Sealing Procedures in the United States, CRREL, 1992
Superpave System – New Tools for Designing and Building More Durable Asphalt Pavements, FHWA
Technology Information At Your Fingertips, A Directory of Information Resources for Improving Transportation Technology - FHWA
Traffic Calming: A Guide to Street Sharing, Michael J. Wallwork, PE, 1993
Use of Scrap Rubber in Asphalt Pavement Surfaces, CRREL 91-27
Utility Cuts in Paved Roads, Field Guide, FHWA, 1997
W-Beam Guardrail Repair and Maintenance, FHWA
rkbooks and Handouts from WST2 Iter Workshops
Flagging Handbook, ATSSA, 1999
Handbook for Walkable Communities, by Dan Burden and Michael Wallwork
Highway Maintenance Welding Techniques and Applications, Tom Cook, Cornell Local Roads Program, 1995
Historic and Archeological Preservation: An Orientation Guide, FHWA/NHI
Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas TRB

☐ Part VI Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility, and Incident Management Operations (MUTCD) FHWA, September 3, 1993

☐ Pavement Maintenance Effectiveness/ Innovative Materials Workshop Participant's Handbook

- ☐ Snow & Ice Control Chemicals, Theory & Practice, Dale G. Keep, Ice & Snow Technologies, LLC,
- Wetland Evaluation Technique (WET), Volume II Methodology, U.S. Army Corps of Engineers, 1993

### Non-Credit Self-Study Guides

These non-credit self-study guides are available through WSDOT Staff Development, and may be obtained from the WST2 Center. An invoice will be sent with these non-credit course materials.

- Basic Surveying, \$20
- Advanced Surveying, \$20
- ☐ Contract Plans Reading, \$25
- Technical Mathematics 1, \$20
- Technical Mathematics II, \$20
- Basic Metric System, \$20

### **Computer Programs**

The following computer programs may be downloaded from the Internet at: http://www.wsdot.wa.gov/TA/Operations/ Environmental/Soft.htm

**Everseries Pavement Analysis Programs:** This series of programs contains three independent modules:

- Evercalc 5.0 A FWD Pavement Moduli Backcalculation Program
- Everstress 5.0 A Layered Elastic Analysis Program
- Everpave 5.0 A Flexible Pavement Overlay Design Program

HyperCalc - A shareware utility for converting between metric and English units

APWA Cad Symbol Standards and Menus - A public domain program of standard AutoCAD symbols developed by the Washington Chapter of APWA for use with AutoCAD release 12.

FWD Area Program - This program is useful in calculating Normalized Deflections Area Value, and Subgrade Moduli from FWD Data.

**STIP Too** Application (Version 5.1 from 3/7/2001) – This program enables you to manage your Six Year TIP (Transportation Improvement Plan) and send it to your MPO/RTPO and/or your Regional Local Programs Office for inclusion in the STIP (Statewide Transportation Improvement Program) in FileMaker Pro 5.0.

### On Screen Forms:

- Progress Billing Form (Excel)
- Local Agency Agreement (Form 140-039)
- Local Agency Agreement Supplement (Form 140-041)
- Federal Aid Project Prospectus (Form 140-101)
- **Environmental Classification Summary** (Form 140-100
- Bid Proposal Package
- Safety Management System Application
- **BRAC** Funding Application

### Manuals:

- A Local Agency Guide to Pavement Management/Streetwise Manuals
- The Local Agency Guidelines (LAG) Manual
- The Local Agency Safety Management System Manual
- The STIP Too version 3.3 manual

### Washington State T2 Center

Contact: Laurel Gray or Wendy Schmidt

phone: (360) 705-7386, fax (360) 705-6858

web: http://www.wsdot.wa.gov/TA/T2Center/TRAIN2.HTM

To register for a class in this category contact the person above.

### Pavement Condition Rating Workshops

June 26-27, Tacoma. \$45 Local Agencies/ \$90 Consultants. Instructor: Bob Brooks. Participants will learn to rate any of the pavements commonly found in Washington. The rating values obtained using the definitions and methods learned in this course should compare favorably with those obtained and used in the Washington State Pavement Management System. Each participant should be able to perform a pavement condition survey with reasonable objectivity.

### The Anatomy of a Grant: Grantwriting Workshop

July 26-27, Lacey; July 31-August 1, Ellensburg; August 6-7, SeaTac. Instructor: Sharon Bridwell. \$150 local agencies/\$300 consultants. You don't need to be a professional writer to write effective grant proposals. In this two-day workshop you'll learn some practical steps to take toward grantwriting and how to approach the right funders for the dollars you need. You will look at three types of grants: federal, state, and foundation. You will write part of a state-type grant over the two days.

### APTS (Advanced Public Transportation Systems) Mobile Showcase

September 11, Moses Lake. This training will be offered the day prior to the Pacific NW Transportation Technology Expo at the Grant Co. Fairgrounds and will showcase the technologies on the bus which will be present for the Expo. The course will focus on the use of in-vehicle and out-ofvehicle technologies employed in the design of: traffic signal priority systems (TSPS), electronic payment systems (EPS), advanced traveler information systems (ATIS), and public transportation operations (PTO). The course will also discuss the requirements, anticipated benefits, and the physical architectures of these systems. It will use case studies and "lessons learned" through system deployment to illustrate their use and implementation. This workshop is for members of the transportation community with responsibilities in transit planning, management, operations, and/or maintenance. .7 CEUs will be awarded. 8:30 am to 4:30 pm. Free to public agencies, \$150 to others.

### Snow and Ice Control Chemicals

September 24, Pullman; September 25, Ellensburg; October 1, Tacoma; October 2, Vancouver. \$35. Instructor: Dale Keep. This class will cover the difference between anti-icing and deicing, when each is appropriate for use, and how to use each method correctly. Included will be information on the advantages and disadvantages of both liquid and solid deicers, how they work, why they work and their limits. Also covered is "Total Storm Management." This presents the steps required to proactively manage a storm event rather than react to it, and the benefits of a proactive winter operations program.

### **Cultural Resources Training**

September 25-28 (tentative), The Dalles, OR. \$350. This class provides an exceptional opportunity to work with the region's most qualified instructors in cultural resources. Sessions take place at the Gorge Discovery Center and Maryhill Museum. There will be discussions on the Native American perspective on cultural resources, state archaeology, prehistory of Washington, Native American ethnobotany, prehistoric stone artifacts, rare plants, logging in the northwest, the historic Columbia River Highway, federal and state cultural resource regulations and how they apply to your agency. Highlights will be an evening dinner and discussion with a demonstration of flintknapping, and a field trip where participants will see ancient petroglyphs and will learn how to "read" the landscape and recognize probable cultural resources located at the site. This course is offered twice yearly, in the spring and fall.

### Contract Plans, Specifications, and Estimate Preparation (PS&E)

September 26-27, Kent; October 24-25, Spokane; November 14-15, Lacey. \$40 local agencies/\$80 consultants. This two-day class covers the preparation of PS&E by WSDOT, consultants, and local agency staff. Instruction will be based on the Plans Preparation Manual as well as other references. The course includes contract special provision writing. It will cover the most recent requirements for preparing complete, biddable, constructable, and defensible plans, and the most recent requirements for writing complete, concise, and well-formatted special provisions.

### LAG Training Program

The 14 courses listed below are being developed to bring LAG training to local agencies. It is anticipated that many of the courses will be ready by fall 2001 and will be offered yearly from fall thru spring. Indicate your interest by signing up on our "waiting lists" online. Individual classes will be developed in response to the number of people signed up on the waiting lists. If you have questions contact Darlene Sharar at (360) 705-7383. The wait lists can be accessed by going to http://www.wsdot.wa.gov/TA/ *Operations/LAG/LAGprotrain.HTM.* 

- Right of Way Procedures Workshop LAG Manual Chapter 25 and the Federal Perspective.
- Advanced Endangered Species Act: LAG Manual Chapter
- Construction Documentation: LAG Manual Chapters 51, 52, and 53.
- Section 106 Process-National Historic Preservation Act of 1966: LAG Manual Chapter 24. Brian Hasselbach, Environmental Manager with Highways and Local Programs, will present this class along with the "Introduction to the Endangered Species Act and Biological Assessments."
- Funding Workshop: LAG Manual Chapters 12, 21, 22, and 23. Agreements and supplements, prospectus, progress billings.
- DBE/EEO/OJT: LAG Manual Chapters 26 and 27.
- LAG Manual Overview.
- Consultants LAG Manual Chapter 31.
- Certified Testers.
- Design Standards from PS&E to Award.
- Railroad Procedures.
- Emergency Relief Programs.
- Enhancement Program.
- Introduction to Environmental.

### **Endangered Species Act Training Program**

Beginning this fall, the following courses will be available to agencies seeking 4(d) coverage under the Regional Road Maintenance Endangered Species Act Program Guidelines. With adoption of the Guidelines and commitment to the ten program elements contained in the Guidelines, agencies will receive a "take" limit under the 4(d) rule. This training program is one of the ten program elements. Larger agencies will be encouraged to use the "train-the-trainer" program for training their staff. Smaller agencies will be able to send staff to regularly scheduled WST2 classes. An informational packet will be sent to all agencies requesting the level of participation desired by each. For information on the Regional Road Maintenance Program and Guidelines Manual, log on to http://www.metrokc.gov/roadcon/bmp/pdfguide.htm

- **ESA 101(1)** Management and Executive Briefing (2 hours)
- ESA 101(2) Basics of ESA Compliance for Technical Staff (4 hours)
- ESA 101(3) Basics of ESA Compliance for Field Crews (4 hours)
- ESA 102 Best Management Practices for Field Crews (8 hours plus additional demonstration training)
- ESA 103 Biological Identification for Maintenance Crews, Supervisors, Design and Environmental Staff (8 hours)
- ESA 104 Design Procedures for Roadway Maintenance Engineers and Supervisors (8 hours)
- ESA 105 Permit Requirements (2 hours)
- ESA 106 Project Monitoring and Oversight (4 hours)
- Train-the-Trainer 101 Field application of BMPs (16 hours)
- **Train-the-Trainer 102** All ESA courses (16 hours)

### Up and Coming WST2 Classes:

- Subsurface Utility Engineering (SUE) Three sessions coming this summer. Presented by CH2M Hill.
- Stream Stability and Scour at Highway Bridges -January 29-31, 2002.

# Associated General Contractors of Washington

**Education Foundation** 

Contact: David Hymel or Adam Shinn

(206) 284-4500 or (206) 284-4595 web: http://www.agcwa.com

To register for classes in this category, contact the person above.

# Certification in Construction Site Erosion and Sedimentation Control

July 25-26, Seattle; August 15-16, Tacoma; Sept. 5-6, Seattle; Sept. 10-11, Olympia; Oct. 3-4, Vancouver; Oct. 17-18, Bellingham; Nov. 1-2, Seattle; Nov. 28-29, Wenatchee; Dec. 4-5, Tacoma; Dec. 11-12, Shoreline. \$250. This course is the same one that has previously been taught by Environmental Affairs staff at WSDOT. Classes can be presented for individual agencies.

# TRANSPEED University of Washington

Contact: Christy Roop

phone: (206) 543-5539 fax: (206) 543-2352

web: http://www.engr.washington.edu/epp

To register for classes in this section, contact the person above.

Prices are for local agencies/all others.

### Basic Highway Capacity Analysis for Engineers and Planners

June 25-27, Seattle. \$265/465.

### **Managing Project Delivery**

July 18-20, Seattle. \$750/950.

### **Urban Street Design**

August 1-3, Seattle. \$265/465.

### Managing Scope, Schedule and Budget

August 7-9, Seattle. \$645/845.

### Basic Roadway Geometric Design

August 20-22, Seattle. \$265/465.

### **Bridge Foundation Design**

September 18-20, Seattle. \$265/465.

### **University of Washington**

**Engineering Professional Programs (EPP)** 

Contact: Emily West

phone: (206) 543-5539 fax: (206) 543-2352

email: uw-epp@engr.washington.edu web: http://www.engr.washington.edu/epp

To register for classes in this category, contact the person above.

Prices are for early/late registration.

### Mechanical Engineering Refresher

September 6-October 16, Seattle. Tuesdays and Thursdays, 6:30-9:00 pm. \$525/595

### E.I.T./Fundamentals Refresher

September 5-October 15, Seattle. Monday and Wednesday, 6:30-9:00 pm. \$425/495

### **Civil Engineering Refresher**

September 13-October 18, Seattle. Tuesday and Thursday, 7:00-9:30 pm. \$445/515

### **Cold Regions Engineering Short Course**

August 2-6, November 1-5. **\$1,095/1,155**, 3 CEUs. This course is held 3-4 times per year, usually in Seattle, but occasionally in other locations.



John Carpita, MRSC Public Works Consultant, noticed this "Sidewalk Closed" sign on a state highway east of Apache Junction, Arizona. He noted, "There's not a sidewalk in sight for 30 miles each way"! Thanks John!

# Sign of the Times

Do you have a humorous traffic sign to share? Send us a print or e-mail a digital image (preferably a 300 dpi, 1000 x 1500 dpi jpg or tiff) and we will add it to our collection for publishing. Please provide your name, title, agency or company, and a short description of where and when you saw the sign. We want to give you credit for your participation. You can e-mail the image to <code>SundeD@wsdot.wa.gov</code> or mail the photo to:

"Sign of the Times" WST2 Center PO Box 47390 Olympia, WA 98504-7390

Please don't send your original photo. Although we will do our best to return the photo, we can't guarantee it.

